

Serial No. 10/822,374
Docket No. NEC WNZ-2665
Amendment D

REMARKS

The rejection of claims 9-11 under §112 as being indefinite for failing to particularly point out and distinctly claim the subject matter of the invention is in error. Claims 8 and 10 were previously amended in the response to the Office Action dated November 20, 2007, they no longer include the limitation "the predetermined number of samples." Therefore, since claims 8 and 10 are in condition for allowance with respect to the §112 rejection, and the Examiner's rejection in the current Office Action is in error.

The rejection of claims 1, 3, 5, and 6 under 35 USC §103 (a) as being obvious over Fujiwara, in view of U.S. Publication No. 2003/0081668 to Yousef et al. and further in view of U.S. Patent No. 5,892,632 to Behrens et al. also is in error. Regarding claim 1, the rejection is in error because claim 1 requires, in part, "calculating an equalization coefficient ... by using a matrix calculation and 3000 or more of sampled waveform data". Claims 8 and 10 contain similar requirements. Neither Fujiwara nor Yousef et al. nor Behrens et al. teach or suggest this requirement. Moreover, this difference is more than merely academic. The equalizing tap coefficients according to the instant claimed invention are calculated all at once by use of a predefined matrix equation (see equation (1) of page 8) having a large number of samples, that is, all of a predetermined number or more of sampled data of reproduced waveforms or signals (see pages 7 to 8). As a result, even if a disturbance such as noise or the like occurs, the calculated tap coefficient will not diverge. As noted in Applicants' sworn specification, "with 3000 or more samples, information can be read at a lower error rate... since the error rate stays almost the same

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Serial No. 10/822,374
Docket No. NEC WNZ-2665
Amendment D

with 3000 or more samples..." [Specification page 10, lines 12-14]. Moreover, as noted at page 10, lines 15-16, of Applicants' sworn specification, the error rate improves when the number of samples is increased from 3000. As noted in Amendment B, the contents of which are incorporated herein by reference, Fujiwara is quite different from Applicants' claimed invention. Fujiwara teaches that a technique obtains the optimal tap coefficient for equalization by iteration. This technique corresponds to a technique which has been described on "Related Art" of Description of this invention (see page 3, last paragraph). Accordingly, the equalization by the iteration is susceptible to large disturbance by, for example, noise or the like, and thus, the calculated coefficients do not converge but diverge, which is a problem as described above.

Yousef et al. teaches that the equalizing tap coefficients are calculated from the waveforms of each T/m (m is an integer number 2 or more) by using a clock period T (see paragraphs No. 0081 to No. 0083). That is to say, Yousef et al. teaches " $aT/2$ spaced equalizer" with "oversampling factors [of] $T/3$, $T/4$ " but fails to disclose a specific predefined minimum number of samples, as required in claim 1. [Paragraph 0081]. The office action does not even suggest that one skilled in the art reading Yousef et al. would be motivated in any way to develop the minimum sampling requirement of claims 1, 8 and 10. Because Yousef et al. neglects to teach of a specific number of samples at which the error rate has an improved efficiency, and since Fujiwara also fails to teach this, no combination of Fujiwara and Yousef et al. would achieve claims 1, 8 and 10, and claims 1, 8 and 10 cannot be held obvious in light of Yousef et al.

Behrens et al. teaches that matrix equations may be used to compute interpolation coefficients, but not equalization coefficients. The interpolation coefficients disclosed by Behrens et al. have no relation to reproduced waveforms. The interpolation coefficients

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Amendment D

were preliminarily computed and stored in memory, as can be seen in FIG. 8B and FIG. 8C of Behrens et al. As Behrens et al. fails to disclose calculating an equation coefficient using a matrix calculation and waveform data, it would not have been possible for one skilled in the art to combine the teachings of Behrens et al. and the other references to produce the claimed invention.

Claims 3, 5 and 6 are dependent on claim 1 and are allowable for the same reasons that claim 1 is allowable, as well as for their own additional limitations.

Turning to the rejection of claim 4, as unpatentable over Fujiwara in view of Yousef and Behrens and further in view of Miyashita et al., claim 4 is indirectly dependent on claim 1. The deficiencies of the combination of Fujiwara and Yousef et al. and Behrens et al. are discussed above vis-à-vis claim 1. It is not seen that Miyashita et al. supplies the missing teachings to Fujiwara and Yousef et al. to achieve or render obvious claim 1 or claim 4 which depends indirectly thereof. The Examiner cites Miyashita et al. as disclosing a specific partial response value. Even assuming arguendo Miyashita et al. is as stated by the Examiner, Miyashita et al. still does not supply the missing teachings to the Fujiwara/Yousef et al. combination to achieve render obvious claim 1. Accordingly, no combination of Fujiwara, Yousef et al., Behrens et al. and Miyashita et al. would achieve render obvious claim 1 or claim 4 which depends thereon.

Turning to the rejection of claim 7 as being unpatentable over Fujiwara in view of Yousef and Behrens and further in view of Akiyama et al., claim 7 is indirectly dependent on claim 1. The deficiencies of Fujiwara and Yousef et al. vis-à-vis claim 1 are discussed above. It is not seen that Akiyama et al. supplies the missing teachings to the Fujiwara/Yousef et al. combination to achieve render obvious claim 1. Thus, no

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Amendment D

combination of Fujiwara, Yousef et al. and Akiyama et al. reasonably could be said to achieve render obvious claim 1 or claim 7 which depends indirectly thereon.

Turning to the rejection of claims 8-11 as being obvious over Fujiwara in view of Yousef, independent claims 8 and 10 similarly require using a predefined number of 3000 or more samples. Neither Fujiwara nor Yousef et al. teach this. Moreover, this difference is more than merely academic. As discussed above, equalizing tap coefficients according to the instant claimed invention are calculated all at once by use of a predefined matrix equation (see equation (1) of page 8) having a large number of samples, that is, all of a predetermined number or more of sampled data of reproduced waveforms or signals (see pages 7 to 8). As a result, even if a disturbance such as noise or the like occurs, the calculated tap coefficient will not diverge. As noted in Applicants' specification, "with 3000 or more samples, information can be read at a lower error rate... since the error rate stays almost the same with 3000 or more samples..." [Specification page 10, lines 12-14]. Moreover, as noted at page 10, lines 15-16, of Applicants' specification, the error rate improves when the number of samples is increased from 3000. As pointed out in Amendment B, the contents of which are incorporated herein by reference, Fujiwara is quite different from Applicants' claimed invention. Fujiwara teaches that a technique obtains the optimal tap coefficient for equalization by iteration. This technique corresponds to a technique which has been described on "Related Art" of Description of this invention (see page 3, last paragraph). Accordingly, the equalization by the iteration is susceptible to large disturbance by, for example, noise or the like, and thus, the calculated coefficients do not converge but diverge, which is a problem as described above.

Yousef et al. teaches that the equalizing tap coefficients are calculated from the waveforms of each T/m (m is an integer number 2 or more) by using a clock period T (see

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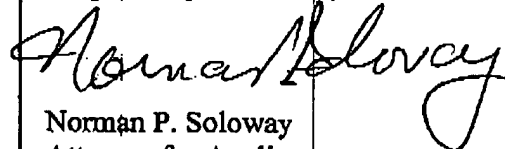
paragraphs No. 0081 to No. 0083). That is to say, Yousef et al. teaches "a T/2 spaced equalizer" with "oversampling factors [of] T/3, T/4" but fails to disclose a specific predefined minimum number of samples, as required in claim 1. [Paragraph 0081]. The office action does not even suggest that one skilled in the art reading Yousef et al. would be motivated in any way to develop the minimum sampling requirement of claims 1, 8 and 10. Because Yousef et al. neglects to teach of a specific number of samples at which the error rate has an improved efficiency, and since Fujiwara also fails to teach this, no combination of Fujiwara and Yousef et al. would achieve claims 8 and 10, and claims 8 and 10 cannot be held obvious in light of Yousef et al.

Claims 9 and 11 depend on claims 8 and 10, respectively, and are allowable for the same reasons above adduced relative to claims 8 and 10, as well as for their own additional limitations.

Having dealt with all the objections raised by the Examiner, the Application is believed to be in order for allowance. Early and favorable action is respectfully requested.

In the event there are any fee deficiencies or additional fees are payable, please charge them (or credit any overpayment) to our Deposit Account Number 08-1391.

Respectfully submitted,



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Serial No. 10/822,374
Docket No. NEC WNZ-2665
Amendment D

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